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Arumugam

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(54) **DECOUPLED MAGNETOQUASISTATIC NON-LINE-OF-SIGHT POSITION AND ORIENTATION SENSING FOR ARBITRARY DISTANCES**

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See application file for complete search history.

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(57) **ABSTRACT**

Methods and systems for non-line-of-sight positioning are disclosed for arbitrarily short to long ranges, where positioning is achieved using a single anchor not requiring tri-/multi-lateration or tri-/multi-angulation. Magnetoquasistatic fields can be used to determine position and orientation of a device in two or three dimensions. Two or three axis coils can be used in receivers and transmitters. The magnetoquasistatic equations are solved in different scenarios, taking into consideration the image signals originating from the interaction between the fields and ground/earth.

30 Claims, 19 Drawing Sheets